

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application.

1.-22. (Cancelled)

23. (Currently Amended) A method of controlling access by mobile users of a substantially infrastructureless communications network to a shared communication medium, wherein the shared communication medium is partitioned into a plurality of individual communication channels that can be individually exploited for communications between the network users, comprising:
- determining the existence of at least one main direction of movement of the network users, said main direction of movement being a direction around which directions of movement of a number of network users are clustered;
 - associating a group of communication channels within said plurality of communication channels to the at least one main direction of movement; and
 - reserving the communication channels of said group to the network users moving substantially in said main direction of movement,
- wherein the determining the existence of at least one main direction of movement includes:
- calculating a distribution of movement directions of at least neighboring network users of the network users that are clustered; and
 - analyzing the distribution, wherein the analyzing includes determining peaks in the distribution;

calculating average velocity vectors for each main direction of movement by
averaging the velocities of network users having direction of movement
clustered around that direction of movement;
calculating relative average velocities between the average velocity vectors; and
validating each main direction of movement, provided that the relative average
velocity thereof to the other average velocity vectors is not lower than a
prescribed lower limit.

24. (Previously Presented) The method according to claim 23, comprising grouping the communication channels into a number of groups depending on a plurality of main directions of movement, and reserving different groups of channels to respective main directions of movement.
25. (Previously Presented) The method according to claim 24, wherein each channel group comprises a number of channels that depends on a number of network users having directions of movement clustered around the respective main direction of movement.
26. (Previously Presented) The method according to claim 23, comprising having each network user communicating to the other network users information concerning the respective direction of movement.
27. (Previously Presented) The method according to claim 26, wherein said information concerning the respective direction of movement comprises information on a network user's velocity vector.

28. (Previously Presented) The method according to claim 27, wherein said information on the network user's velocity vector is obtained by exploiting a geolocation detector or a GPS-based detector.
29. (Cancelled)
30. (Previously Presented) The method according to claim 23, wherein said analyzing the distribution further comprises determining the number of network users having direction of movement clustered around each peak, and validating a peak as a main direction of movement, provided that the respective number of network users exceeds a prescribed value.
31. (Cancelled)
32. (Previously Presented) The method according to claim 23, wherein said reserving the communication channels of said group to the network users moving substantially in said main direction of movement comprises assigning the channels of the group to the different network users substantially on a random basis.
33. (Previously Presented) The method according to claim 23, further comprising reserving a group of channels of said plurality of channels to network users not having a direction of movement clustered around the at least one main direction of movement.

34. (Currently Amended) A media access control (MAC) layer controlling access by a mobile user of a substantially infrastructureless communications network to a shared communication medium, wherein the media access control layer comprises a processor and the shared communication medium is partitioned into a plurality of individual communication channels that can be individually exploited for communications between the network users, the MAC layer granting access to the shared communication medium by:
- determining the existence of at least one main direction of movement of the network users, said main direction of movement being a direction around which directions of movement of a prescribed number of network users are clustered;
 - associating a group of communication channels within said plurality of communication channels to the at least one main direction of movement; and
 - assigning to the network user one communication channel of said group in case the network user's direction of movement is clustered around the at least one main direction of movement,
- wherein the determining the existence of at least one main direction of movement includes:
- calculating a distribution of movement directions of at least neighboring network users of the network users that are clustered; ~~and~~
 - analyzing the distribution, wherein the analyzing includes determining peaks in the distribution;
 - calculating average velocity vectors for each main direction of movement by averaging the velocities of network users having direction of movement clustered around that direction of movement;

calculating relative average velocities between the average velocity vectors; and
validating each main direction of movement, provided that the relative average
velocity thereof to the other average velocity vectors is not lower than a
prescribed lower limit.

35. (Previously Presented) The medium access control layer according to claim 34, wherein the medium access control layer communicates to the medium access control layers of the other network users information concerning the direction of movement the network user.
36. (Previously Presented) The medium access control layer according to claim 35, wherein the medium access control layer includes information on a network user's velocity vector in at least one message transmitted by the network user.
37. (Previously Presented) The medium access control layer according to claim 36, wherein said information on the network user's velocity vector is derived from a geolocation detector or a GPS-based detector.
38. (Cancelled)
39. (Previously Presented) The medium access control layer according to claim 34, wherein the number of network users having direction of movement clustered around each peak is determined, and a peak is validated as a main direction of movement, provided that the respective number of network users exceeds a prescribed value.

- 40. (Cancelled)
- 41. (Previously Presented) The medium access control layer according to claim 34, wherein said one communication channel of the group is assigned to the network user substantially on a random basis.
- 42. (Previously Presented) The medium access control layer to claim 34, wherein the network user is assigned a communication channel not belonging to said group in case the network user's direction of movement is not clustered around the at least one main direction of movement.
- 43. (Previously Presented) A transmitter for a mobile user of a substantially infrastructureless communications network comprising a medium access control layer according to claim 34.
- 44. (Previously Presented) A substantially infrastructureless communications network with mobile network users acting as communication traffic routers, wherein the network users have transmitters according to claim 43.